



Goddard Procedural Requirements (GPR)

DIRECTIVE NO.	<u>GPR 1700.6B</u>	APPROVED BY Signature:	<u>Original Signed By</u>
EFFECTIVE DATE:	<u>October 25, 2012</u>	NAME:	<u>Judith N. Bruner</u>
EXPIRATION DATE:	<u>October 25, 2017</u>	TITLE:	<u>Director, Safety and Mission Assurance</u>

COMPLIANCE IS MANDATORY

Responsible Office: Code 350/Occupational Safety & Health (OS&H) Division

Title: Confined Space Program Requirements

PREFACE

P.1 PURPOSE

This directive establishes requirements for practices and procedures to protect employees who enter confined space work locations at GSFC as defined by the Occupational Safety and Health Administration (OSHA) Standards.

P.2 APPLICABILITY

This directive applies to all government and contractor confined space entries associated with operations at Goddard Space Flight Center (GSFC), including Greenbelt, Wallops Flight Facility (WFF), and remote locations under GSFC control. Confined space entries associated with construction activities will comply with 29 CFR 1910.146. Telecommunications contractors entering confined spaces on GSFC will comply with 29 CFR 1910.268. For GSFC contractors, this directive is applicable as specified in the contract clauses for the particular contract by NASA FAR Supplement 1823.7001 NASA Safety and Health Solicitation Provisions and Contract Clauses. The term "Safety Office" is applicable equally to both the Greenbelt (Code 350), and WFF (Code 803) safety organizations. As directed by NPR 8715.3, Confined Space Entry is considered a "hazardous operation" for NASA.

P.3 AUTHORITIES

- NPD 8700.1, NASA Policy for Safety and Mission Success
- NPR 1800.1, NASA Occupational Health Program Procedures
- NPR 8715.3, NASA General Safety Program Requirements

P.4 APPLICABLE DOCUMENTS

- 29 Code of Federal Regulations (CFR) 1910.146, Permit-Required Confined Spaces
- 29 Code of Federal Regulations (CFR) 1910.268, Telecommunications
- 29 Code of Federal Regulations (CFR) 1910.269, Electric Power Generation, Transmission, and Distribution
- 29 Code of Federal Regulations (CFR) 1910.1000/ Subpart Z, Toxic and Hazardous Substances
- 29 Code of Federal Regulations (CFR) 1926.21(b)(6)(i), Safety Training and Education

CHECK THE GSFC DIRECTIVES MANAGEMENT SYSTEM AT
<http://gdms.gsfc.nasa.gov> TO VERIFY THAT THIS IS THE CORRECT VERSION PRIOR TO USE.

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- f. 29 Code of Federal Regulations (CFR) 1926.353(b)(1), Ventilation and protection in welding, cutting, and heating
- g. 29 Code of Federal Regulations (CFR) 1926.800 Subpart S – Underground Construction
- h. 29 Code of Federal Regulations (CFR) 1926.956, Underground Lines
- i. 29 Code of Federal Regulations (CFR) 1926.651(g), Hazardous Atmospheres in Excavations
- j. 29 Code of Federal Regulations (CFR) 1960.73, Retention of Records
- k. NASA FAR Supplement 1823.7001, NASA Safety and Health Solicitation Provisions and Contract Clauses
- l. GSFC Form 23-52 – GSFC Confined Space Entry Evaluation/Permit, use of a similar form is allowed at WFF.

P.5 CANCELLATION

GPR 1700.6A, Confined Space Program at the Goddard Space Flight Center (GSFC)

P.6 SAFETY

Use one or more of the hazard analysis tools appropriate to assess the actual and potential hazards associated with confined space entry, such as the Job Hazard Analysis tool or equivalent found at: <http://safety1st.gsfc.nasa.gov/>.

P.7 TRAINING

- a. Personnel who enter confined spaces or are responsible for facilities/equipment that have confined spaces, shall take a confined space training course that meets OSHA and NASA requirements. As set forth in their contracts, contractors are responsible for obtaining training for their personnel and ensuring all subcontractors meet OSHA and NASA training requirements. Initial and refresher training shall include the course content requirements as defined by 29 CFR 1910.146(g). See Figure 1) Per NASA NPR requirements, retraining shall be completed at an interval not greater than 4-years. Personnel shall be retrained as required by OSHA;
- b. All personnel that complete the training shall be required to pass a written examination that adequately measures the knowledge and understanding of the requirements, policies, and procedures applicable to entering confined spaces;
- c. Personnel designated to conduct atmospheric testing of confined spaces shall also be trained in the requirements above; and in the operation, calibration and care of specific testing equipment to be used. Individuals conducting atmospheric tests shall be qualified to interpret the test results; and managers and/or supervisors shall maintain current training records, as well as training requirements for each employee tasked to perform confined space entry activities. Documentation shall be in writing. The manager/supervisor will oversee the respective programs to ensure only trained personnel enter confined spaces.

Authorized Entrants	Attendants	Entry Supervisors
29 CFR 1910.146(g)	29 CFR 1910.146(g)	29 CFR 1910.146(g)
29 CFR 1910.146(h)	29 CFR 1910.146(i)	29 CFR 1910.146(j)
GPR 1700.6B and GSFC Form 23-52	GPR 1700.6B and GSFC Form 23-52	GPR 1700.6B and GSFC Form 23-52
Any specific organization-developed procedures which apply to a given space	Any specific organization-developed procedures which apply to a given space	Any specific organization-developed procedures which apply to a given space
Atmospheric Testing Equipment	Atmospheric Testing Equipment	Atmospheric Testing Equipment

Confined Space Training Requirements

Figure 1

P.8 RECORDS

Record Title	Record Custodian	Retention
Form 23-52 Entry Evaluation/Permit; use of a similar form is allowed at WFF.	Directorate of Employees/Contractors Entering Confined Spaces	* <u>NRRS 8/38B</u> . Destroy when 5 years old
Certificate of Confined Space Entry Training	OHCM or Supervisor of Employee	* <u>NRRS 3/33G1</u> . Destroy 5 years after employee discontinues or completes training
Directorate Annual Review of the Confined Space Entry Program	(1) Directorate Conducting Confined Space Operations. (2) Copy provided to Codes 350/803. See Note below.	(1) * <u>NRRS 1/125A</u> . *Destroy when 10 years old or when superseded or obsolete, whichever comes first. (2) * <u>NRRS 1/125B</u> . Destroy 2 years after superseded or obsolete, whichever is sooner.
Code 350/803 Annual Review of the Confined Space Entry Program	Codes 350/803	* <u>NRRS 1/125A</u> .
List of Permit-required Confined Spaces	(1) Directorates Who Manage the Confined Space (2) Copy provided to Codes 350/803. See Note below.	(1) <u>29 CFR 1960.73</u> . Records and reports shall be retained for 5 years following the end of the fiscal year to which they relate. (2) <u>29 CFR 1960.73</u> .

**NPR 1441.1 – NASA Records Retention Schedules*

Note: Record (1) is the original signed record. Record (2) is a copy.

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P.9 MEASUREMENT/VERIFICATION

Directorates that conduct confined space entry activities, as a minimum shall:

- a. Maintain a listing of permit-required confined spaces in their work areas, and provide any new or deleted spaces to the base list within one month to Code 350/803.
- b. Maintain the completed GSFC Forms 23-52 (use of a similar form is allowed at WFF) for their operations (to include collecting the forms from contractors), and review the directorate's permit space program utilizing the closed evaluation/permits retained per section P.8, in the medium of a single annual review.
 1. Revise the program as necessary, to ensure that employees participating in entry operations are protected from hazards and that the GSFC Forms 23-52 are being filled-out completely.
 2. Collect data to monitor trends and lessons learned which will be provided to line organizations and briefed to GSFC Confined Space Safety Working Group.
- c. At WFF the Code 803.2 Safety Office will maintain a copy of confined space paper work including confined space permits.

PROCEDURES

In this document, a requirement is identified by "shall," a good practice by "should," permission by "may" or "can," expectation by "will," and descriptive material by "is."

1. CONFINED SPACE ENTRY POLICY

Safe practices, applicable to all civil service personnel, contractors, and non-contractors performing operations at GSFC facilities, are in place to prevent exposure to unsafe conditions while working within non-permit-required and permit-required confined spaces. Unsafe conditions include exposure to hazardous atmospheres, potential contact hazards such as steam burns, electrical shock, engulfment and drowning. Dangerous air contamination within a confined space is any atmosphere presenting a potential of suffocation, health impairment, contact injury, disablement, or death. Examples include:

- a. Combustible or flammable gases and vapors at concentrations in excess of 10 percent of the lower explosive limit;
- b. An oxygen concentration less than 19.5 percent or greater than 23.5 percent by volume; and
- c. Toxic substances present at concentrations in excess of their occupational exposure limits.

2. ROLES AND RESPONSIBILITIES (CIVIL SERVICE AND CONTRACTORS)

2.1 Center Director shall ensure the requirements of NPR 8715.3 are met.

2.2 Directors Of shall ensure that civil service employees, onsite mission support, and construction contractors in their Divisions are informed of and adhere to, GSFC Confined Space Entry Policy by:

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- a. Controlling access to their respective managed confined spaces. Specifically, they shall:
 1. Ensure all confined spaces are controlled through the use of locks or other measures that prevent unauthorized personnel from entering;
 2. Ensure that all permit-required confined spaces within their control are properly placarded with appropriate signage;
 3. Ensure that all personnel working within their respective facilities or areas are aware of all permit-required confined spaces and the specific hazards they pose;
 4. Coordinate with the Occupational Safety and Health Division for assistance in evaluating and documenting the actual and/or potential hazards within all identified confined spaces; and
 5. Notify the Occupational Safety and Health Division and affected employees of any new or unidentified confined spaces.
- b. Develop and implement a written Permit-Required Confined Space Program with procedures that is consistent with provisions outlined with 29 CFR 1910.146, "Permit-Required Confined Spaces" and this document. The written program procedures shall be available for inspection by employees and their authorized representatives;
- c. Organizations will apprise any contractor of the elements, including the hazards identified and the host organization's experience with the space, that make the space in question a permit space. Additionally, apprise the contractor of any precautions or procedures that the host organization has implemented for the protection of employees in or near permit spaces where contractor personnel will be working;
- d. Maintain the completed GSFC Forms 23-52 for their operations (to include collecting the forms from contractors), and review the directorate's permit space program utilizing the closed evaluation/permits retained per section P.8, in the medium of a single annual review; and
- e. At WFF, ensure that all confined spaces are uniquely numbered. The Code 803.2 Safety Office can assist with the numbering sequence.

2.3 Occupational Safety and Health Division shall:

- a. Provide information and consultation as necessary to project management and employees involved in confined space operations;
- b. Review confined spaces procedures for specific projects, at the request of managers or supervisors;
- c. Review at least annually this directive and the effectiveness of the confined space program as outlined herein;
- d. Using confined spaces regulations, assist GSFC management in making appropriate decisions about confined spaces in their areas of operation;
- e. Provide contract and specification review as requested by GSFC management;
- f. Function as the regulatory liaison with regulatory agencies as needed for confined space entries;
- g. Ensure compliance with standards set forth in the program by periodic inspection of entry sites and canceling permits where unsafe conditions are present;
- h. Chair the GSFC Confined Space Working group;
- i. Coordinate with the Career Development and Employee Worklife Office Career Development and Training Group (Code 114) to make training in confined spaces procedures available to civil service staff; and

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2.4 Confined Space Entry Supervisors shall:

- a. Have overall responsibility for the approval for evaluation/entry into and work conducted within confined spaces. As such, they are responsible for ensuring that the requirements and procedures of this directive are implemented. If uncertainty exists, Entry Supervisors shall request assistance from Directorate or Center safety personnel who will resolve questions prior to any confined space entry;
- b. Complete and post the confined space Confined Space Entry Evaluation/Permit, GSFC Form 23-52 (use of a similar form is allowed at WFF) for inspection by the confined space Authorized Entrants and Attendants; and
- c. Ensure that all control measures for safety of personnel are taken, including availability of communication equipment, notification of rescue personnel prior to the start of confined space entry, and proper Personal Protective Equipment (PPE), tools, and materials are on hand and utilized as required on the Confined Space Entry Evaluation/Permit.

2.5 Confined Space Authorized Entrants shall:

- a. Recognize the conditions and hazards of work requiring the utilization of permit-required confined space procedures including mode, signs, symptoms, and consequences of exposure;
- b. Use the materials, equipment, and procedures specified in their written procedures to implement the Confined Space Program; and
- c. Demonstrate proficiency in atmospheric testing equipment reading/interpretation.

2.6 Attendant shall:

- a. Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure;
- b. Be aware of possible behavioral effects of hazard exposure in entrants;
- c. Continuously maintain an accurate count of Authorized Entrants in the permit space and ensures that the means used to identify Authorized Entrants accurately identifies who is in the permit space;
- d. Remain outside the permit space during entry operations until relieved by another Attendant;
- e. Communicate with entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space under paragraph 4.2 of this document;
- f. Monitor activities inside and outside the space to determine if it is safe for entrants to remain in the space and orders the entrants to evacuate the permit space immediately under any of the following conditions:
 1. If the Attendant detects a prohibited condition;
 2. If the Attendant detects the behavioral effects of hazard exposure in an authorized entrant;
 3. If the Attendant detects a situation outside the space that could endanger the authorized entrants;
 4. If the Attendant cannot effectively and safely perform all the duties required;
- g. Summon rescue and other emergency services as soon as the Attendant determines that entrants may need assistance to escape from permit space hazards;
- h. Take the following actions when unauthorized persons approach or enter a permit space while entry is underway:

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1. Warn the unauthorized persons to stay away from the permit space;
2. Advise the unauthorized persons that they shall exit immediately if they have entered the permit space;
3. Inform the Authorized Entrants and the Entry Supervisor if unauthorized persons have entered the permit space: and,
- i. Perform no duties that might interfere with the Attendant's primary duty to monitor and protect the Authorized Entrants.

2.7 Contracting Officers shall obtain a corrective action plan if deficiencies are identified in the performance of duties required in this document.

2.8 Onsite and Construction Contractors shall:

- a. Submit, as part of their contracts, a Confined Space Program (if required by their work scope) that meets the provisions of OSHA requirements and this directive;
- b. Provide any and all training and authorization records including, training records (to include atmospheric testing equipment training records), Job Hazard Analyses, Confined Space Entry Evaluation/Permits, etc.;
- c. Ensure they receive a briefing from the organization which controls the confined space per OSHA 1910.146 (d) (5); and,
- d. Utilize GSFC Form 23-52, GSFC Confined Space Entry Evaluation/Permit for all permit and non-permit confined space entries; use of a similar form is allowed at WFF.

2.9 Directorate Safety Representative shall:

- a. Assist "Directors Of" in the completion of section 2.2 of this document;
- b. Provide information and consultation to project management and employees involved in confined space operations;
- c. Review confined spaces procedures for specific projects;
- d. Review at least annually the directorate permit-required confined space program and the effectiveness of that program as outlined in section 2.2(b) of this document;
- e. Assist GSFC management in making appropriate decisions about confined spaces in their areas of operation;
- f. Ensure compliance with standards set forth in the program by periodic inspection of entry sites and canceling permits where unsafe conditions are present;
- g. Elect to provide more stringent controls and oversight of their respective confined space programs; and
- h. Ensure only trained confined space Entry Supervisors are utilized.

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3. CONFINED SPACE PROCEDURE

3.1 Procedures

These procedures define requirements to reduce injuries and deaths associated with evaluating, entering, working in, and exiting from, confined spaces. They are designed not only to make the confined space safe for the worker, but also to make the worker cognizant of the hazards associated with this work area and the safe work practices necessary to deal with these hazards.

3.1.1 For Non-Permit Confined Space Entry, all hazards and hazardous atmospheres in the confined space will be eliminated prior to entry.

3.1.2 The use and posting of the Goddard Space Flight Center Confined Space Entry Evaluation/Permit, GSFC Form 23-52 form is required for all confined spaces, both permit-required and non-permit; use of a similar form is allowed at WFF. In the proper use of GSFC Form 23-52, the Entry Supervisor shall take the following actions:

- a. The Entry Supervisor will document, before entry into a permitted space is authorized, that the space has been evaluated via the GSFC Form 23-52 and is safe to enter. The Entry Supervisor will fill out the form completely;
- b. The Entry Supervisor, Attendant, and Authorized Entrant(s) will verify that all hazards have been identified and evaluated and the necessary precautions have been taken to eliminate all hazards, and the Entry Supervisor will sign the GSFC Form 23-52;
- c. The Entry Supervisor will post the completed GSFC Form 23-52 for inspection by the confined space entrants and attendants;
- d. The Entry Supervisor will review equipment to be used;
- e. The Entry Supervisor will ensure that atmospheric measuring equipment is available, calibrated, maintained, and used properly;
- f. The Entry Supervisor will ensure that personnel designated as confined space Authorized Entrants have received appropriate confined space training including use/ interpretation of specific equipment to be used for atmospheric monitoring/testing;
- g. The Entry Supervisor will notify the Security Operations Console (Fire Department Dispatcher at WFF) of the date, time, and location of a Permit-Required Confined Space entry to obtain permission from the Console. Entry at Greenbelt will not occur unless the Console can coordinate rescue support from the local Fire Department;
- h. The Entry Supervisor will ensure that all control measures identified on the GSFC Form 23-52 for safety of personnel are taken, including availability of communication equipment, notification of rescue personnel prior to the start of confined space entry, and proper Personal Protective Equipment (PPE), tools, and materials are on hand and utilized as required on the Confined Space Permit; and
- i. The Entry Supervisor may serve as an Attendant or as an Authorized Entrant, as long as that person is trained and equipped as required by this section for each role he or she fills. Also, the duties of the Entry Supervisor may be passed from one authorized, qualified individual to another during the course of the entry operation.

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3.1.3 The Entry Supervisor shall terminate entry and cancel the GSFC Form 23-53, Confined Space Entry Evaluation/Permit when:

- a. A condition that is not allowed under the permit arises in, or near, the permit space, e.g., emergency, change in atmosphere, etc.; or
- b. When the job is completed, all entrants have exited the space, and the space is ready to be returned to service.

3.1.4 Permit-required confined space procedures will be enhanced by the use of area and/or job-specific procedures. Personnel will be trained to specific procedures by the directorate controlling that confined space and that training will be documented.

3.1.5 The center Confined Space Entry Evaluation/Permit Form, GSFC 23-52 (use of a similar form is allowed at WFF), shall be retained per section P.8 of this document. All GSFC Forms 23-52 (including contractor and subcontractor forms) shall be accounted for and audited by the directorate controlling the space; use of a similar form is allowed at WFF.

3.2 Hazards to Confined Space operations

Hazard Identification:

- a. Confined spaces shall be considered hazardous until proven via documentation to be otherwise.
- b. Hazards shall be identified for each confined space prior to entry. The hazard identification process shall be conducted by the entry supervisor and include a review of the following:
 1. The Past and Current uses of the confined space which may adversely affect the atmosphere of the confined space. This would include a review of the Material Safety Data Sheets (MSDS) of past and current contents; obtain assistance from your directorate safety office, if necessary.
 2. The physical characteristics, configuration, and location of the confined space. This would include means of entry and exit, as well as hazards posed by adjacent spaces.
 3. Existing or potential atmospheric hazards, such as:
 - (a) Oxygen deficient or enriched atmosphere;
 - (b) Flammable/explosive atmosphere.
 - (c) Combustible dust and silica concerns; and
 - (d) Toxic atmosphere.
 4. Biological hazards;
 5. Mechanical hazards;
 6. Physical hazards, such as electrical, thermal, radiological, noise, engulfment, structural integrity, etc.;
 7. Chemical Hazards; and
 8. Entrapment/Configuration Hazards

3.3 Hazard Evaluation:

- a. Hazards identified shall be evaluated by the confined space entry supervisor.
- b. Each hazard shall be examined with respect to:
 1. Scope of Hazard exposure;
 2. Magnitude of the hazard;
 3. Likelihood of hazard occurrence;
 4. Consequences of the hazard occurrence;
 5. Potential for changing conditions or activities. Examples of changes in conditions/activities are:
 - (a) Introduction of “hot work” or cleaning agents into the confined space that were not previously identified;
 - (b) The filling/emptying of an adjacent compartment/tank;
 - (c) Weather changes, such as thunderstorms, heat of the day increasing, etc.;
 - (d) The introduction of portable hand or power tools;
 - (e) Exhaust contaminants from internal combustion engines in or near the space; and
 - (f) The creation of silica dust from demolition activities.
 6. Strategies for controlling the hazards. Hazards should be eliminated or controlled to achieve an acceptable level of risk prior to conducting confined space entries. The following hierarchy of control should be followed:
 - (a) Eliminate the hazard;
 - (b) Engineering controls (substitutions, isolation, etc.);
 - (c) Administrative controls (work practices, procedures, personnel assignments, etc.); and
 - (d) Personal Protective Equipment.
 7. Impact on the need for emergency response, such as physical conditions that could hinder emergency rescue.

3.4 Confined Space Entry Evaluation/Permit Posting

At the time of entry, the Entry Supervisor shall:

- a. Make available to all Authorized Entrants and the Attendant the completed Confined Space Entry Evaluation/Permit.
- b. Post at the entry portal or make available by other equally effective means; so that entrant, attendant and inspectors can confirm that pre-entry preparations have been completed.

Danger signage shall also be posted to inform personnel working in the immediate area. Such signage shall include the words “Danger – Permit-Required Confined Space – Do Not Enter!”

3.5 Confined Space Entry Evaluation/Permit Valid Time Period

The Confined Space Entry Evaluation/Permit shall be valid for a time period not to exceed:

- a. The time required to complete the assigned task or job identified on the Confined Space Entry Evaluation/Permit.

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b. One shift, not to exceed 12 hours, with the same crew. The Entry Supervisor will define the “standard” shift work period for all operations and tasks, including method of shift rotation if required, as well as breaks and required rest cycles.

A new Confined Space Entry Evaluation/Permit shall be required if:

- a. There is ANY change in work conditions, which increases the hazard of the confined space, such as weather changes, the addition of new work activities, etc.
- b. A new crew arrives.

3.6 Reclassifying Permit-Required Confined Spaces

29 CFR 1910.146 (c)(7) allows a space classified by the employer as a permit-required confined space to be reclassified as a non-permit confined space by following the stringent OSHA procedures listed in that statute and these additional requirements:

- a. An Entry Supervisor may reclassify a confined space as non-permit temporarily, in real time, by use of the GSFC Confined Space Entry Evaluation/Permit, GSFC Form 23-52, or other documentation in compliance with 29 CFR 1910.146 (c)(7)(iii);
- b. A Directorate Safety Office may reclassify a confined space as non-permit permanently, by submission of a certification letter containing all the required information in 29 CFR 19.10.146 (c)(7)(iii), to Code 350 for approval; and
- c. This certification shall be made available to each employee entering the space or to that employee’s authorized representative.

3.7 Confined Space Entry Evaluation/Permit Revocation

Confined Space Permits will be revoked for any violation of the safety procedures outlined in this document including:

- a. Work activities are outside the limits specified on the permit;
- b. Changes in work activities or environment could introduce a hazard not addressed on the original permit to the confined space;
- c. Incomplete Confined Space Permit;
- d. Atmospheric tests or monitoring not accomplished;
- e. Failure to eliminate the hazards identified on the confined space permit;
- f. Insufficient supervision;
- g. No Attendant on duty;
- h. Insufficient PPE; and
- i. Insufficient Rescue Plan.

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3.8 Alternative Procedures for Entering Confined Spaces

An organization may use OSHA Alternate Procedures for entering a permit-required space under the conditions set forth in 29 CFR 1910.146 (c)(5)(i):

- a. An organization may use OSHA Continuous Forced Air Ventilation procedures for a permit-required space under the strict conditions set forth in 29 CFR 1910.146 (c)(5)(ii)(E); and,
- b. If a hazardous atmosphere is detected or develops during entry:
 1. Personnel will leave the space immediately;
 2. The space will be evaluated to determine how the hazardous atmosphere developed; and
 3. Measures will be implemented to protect personnel from the hazardous atmosphere before any subsequent entry takes place.

3.9 Situations When Ventilation May Not Be Appropriate

Consideration should be given to bonding and using intrinsically safe air movers when moving flammable atmospheres. Ventilation may not be appropriate under conditions such as the presence of friable or loose asbestos; significant bird/rodent droppings presenting a biological risk; gas, vapor, dust concentrations above Upper Explosive Limit (UEL), etc.

4. CONFINED SPACE RESCUE

Each entry into permit-required confined spaces requires that a viable rescue plan shall be established and the Entry Supervisor shall coordinate the operation with the Security Operations Console at Greenbelt and with Code 803 Fire Department Dispatcher at WFF. Emergency Services are required to know the place, time, duration, and activity of the entry operation. No entry shall take place until the Security Operations Console has coordinated rescue services with the local Fire Department and approved the entry. The “Two-Person Rule” is in effect for all entries into permit- required confined spaces.

4.1 Confined Space Emergency Retrieval Systems

To facilitate non-entry rescue, appropriate retrieval systems or methods shall be used whenever an Authorized Entrant enters a permit-required confined space, unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant. In the case of retrieval equipment increasing the overall risk, a rescue plan shall be documented in the directorate confined space program procedures for that space. Retrieval systems shall meet requirements outlined in 29 CFR 1910.146.

4.2 Confined Space Entry Rescue

If, in the course of a non-permit or permit-required confined space entry, an Attendant becomes aware that an Authorized Entrant requires assistance in escaping from the confined space, the Attendant will summon rescue and other emergency services by notifying the Security Operations Console via radio,

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dialing 911 on any on-Center telephone, or dialing (301) 286-9111 for Greenbelt, or dialing (757) 824-1333 for WFF from any off-Center telephone or cell phone. The Attendant will initiate non-entry rescue procedures as documented on the Confined Space Entry Evaluation/Permit.

Note: The Attendant shall not enter a permit-required space to attempt rescue nor shall they leave their post unless relieved by another appropriately trained Attendant.

Appendix A – Definitions

- A.1 Acceptable Entry Conditions** – The conditions that shall exist in a confined space location to allow entry and to ensure that employees involved with confined space operations can safely enter into, and work within the space.
- A.2 Affected Employee** – An individual whose work places them in or near the confined space. Someone who has a need to know about the confined space and its hazards in the conduct of their assigned duties.
- A.3 Attendant** – An individual who is stationed outside one or more permit-required spaces, who monitors the authorized entrants and who performs all attendants' duties assigned in the organization's Confined Space Program.
- A.4 Authorized Entrant** – An employee who is authorized by the employer to enter a confined space.
- A.5 Competent Person** - One who is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.
- A.6 Confined Space** – A confined space is any space that exhibits all three of the following characteristics: large enough to bodily enter and perform work, not designed for continuous human occupancy, and limited means of entry or exit. A permit-required confined space is a confined space that contains any recognized serious safety or health hazard. No entry into permit-required confined spaces will be made until an assessment of that space has been made and an evaluation/ permit is posted.
- A.7 Confined Space Entry Evaluation/Permit** – The written permit defining the conditions under which a permit-required confined space may be entered (see below).
- A.8 Eliminate** – To remove or take out.
- A.9 Engulfment** – The surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be expected to cause death or serious physical harm by filling or plugging the respiratory system, or that can exert enough force on the body to cause critical injury/death by strangulation, constriction, or crushing.
- A.10 Entry** – Entry into a confined space occurs as soon as any part of the entrant's body breaks the plane of an opening into the space.
- A.11 Entry Supervisor** – The person (such as employer, foreman, or crew chief) responsible for determining if acceptable entry conditions are present at either a permit-required space or non-permit-required space where entry is planned, for authorizing entry and overseeing entry operations, based on the pre-entry evaluation, and for terminating entry as required by this section.
- A.12 Hazardous Atmosphere** – An atmosphere that exposes employees to a risk of death, incapacitation, injury, or acute illness from one or more of the following causes:
- (1) A flammable gas, vapor, or mist in excess of 10 percent of its Lower Flammable Limit;
 - (2) An atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;
 - (3) A combustible dust environment;
 - (4) An atmospheric concentration of any substance for which exposure would exceed the Permissible Exposure Limit (PEL) or TLV, whichever is more stringent; and
 - (5) Any atmospheric condition recognized as immediately dangerous to life or health.

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- A.13 Immediately Dangerous to Life or Health (IDLH) Condition** – Any condition that poses an immediate threat of loss of life or physical injury or that may result in irreversible or immediate, severe health effects or other conditions that could impair escape from the confined space. If entry into an IDLH condition is required, rescue personnel and equipment shall be standing by the site.
- A.14 Non-Permit-Required Confined Space** – A confined space that does not contain, or with respect to atmospheric hazards have the potential to contain, any hazard capable of causing death or serious physical harm. Examples include vented vaults, motor control cabinets, and dropped ceilings. Although they are technically defined by OSHA as confined spaces, these spaces have either natural or permanent mechanical ventilation to prevent the accumulation of a hazardous atmosphere, and they are not likely to present suffocation, engulfment or other serious hazards.
- A.15 Occupational Exposure Limit** – Goddard consensus on the amount of a chemical or physical stressor that a person may be exposed to over a working lifetime without suffering ill effects from the exposure. These limits are taken from either the OSHA PELs; published in 29 CFR 1910.1000, tables Z-1, Z-2, or Z-3, or the most current ACGIH TLV guide. Goddard will use whichever is the most stringent standard of the two.
- A.16 Permit-Required Confined Space** – A confined space that has the potential to contain an IDLH hazardous atmosphere, or contains one or more of the following:
- (1) A material/substance that has the potential for suffocating an entrant;
 - (2) A material/substance that has the potential for engulfing an entrant;
 - (3) A material/substance that poses a probable shock hazard;
 - (4) An internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor sloping downward and tapering to a smaller space; and
 - (5) Any other recognized serious safety or health hazards likely to cause death or serious physical harm to the occupant(s), to include any hazard introduced into the space that is required as part of the work being performed within the space, such as coating, cleaning materials, hot work, i.e., welding, cutting or brazing, for which specific permits are required.
- A.17 Qualified Person** – A Qualified Person is a person who has received formal training for the job they are about to undertake. For example, an Entry Supervisor will have documented formal training as an Entry Supervisor.
- A.18 Real Time** – This term is meant to describe actions taken in one shift, on the day of the confined space entry.
- A.19 Reclassified Confined Space** – A space classified by the employer as a permit-required confined space may be reclassified as a non-permit confined space utilizing the detailed procedures listed in 29 CFR 1910.146(c)(7).
- A.20 Shift** - The Entry Supervisor will define the “standard” shift work period for all operations and tasks, including method of shift rotation if required, as well as breaks and required rest cycles.
- A.21 Testing** – The process by which the hazards that may confront entrants of a permit space are identified and evaluated. Testing enables employers to devise and implement adequate control measures for the protection of authorized entrants and to determine if acceptable entry conditions are present immediately prior to entry, during entry, and re-entry following extended periods of time. Testing includes specifying the tests that are to be performed in the permit space and the maintenance of a written record of test results at the location of the test site.

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A.22 Two-Person Rule - A system of organizing employees into work groups for hazardous work activities in such a manner that each employee of the work group is designated to be observed by at least one other employee in the work group. The purpose of the Two-Person Rule is to provide rapid assistance to employees in the event of an emergency.

Appendix B – Acronyms

ACIGH	American Conference of Governmental Industrial Hygienists
CFR	Code of Federal Regulations
FAR	Federal Acquisition Regulation
GPR	Goddard Procedural Requirements
GSFC	Goddard Space Flight Center
IDLH	Immediately Dangerous to Life of Health
JHA	Job Hazard Analysis
MSDS	Material Safety Data Sheets
NASA	National Aeronautics and Space Administration
OSHA	Occupational Safety and Health Administration
OS&H	Occupational Safety & Health
PEL	Permissible Exposure Limit
PPE	Personal Protective Equipment
TLV	Threshold Limit Values
UEL	Upper Explosive Limit
WFF	Wallops Flight Facility

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CHANGE HISTORY LOG

Revision	Effective Date	Description of Changes
Baseline	02/04/2006	Initial Release
A	11/10/2010	Administratively extended and revised to reflect organization name and code change.
B	10/25/2012	<ul style="list-style-type: none">• Updated document to reflect changes in GSFC policy.• Require the completion of a “GSFC Confined Space Entry Evaluation/Permit” (GSFC Form 23-52) by the authorized Entry Supervisor for <u>all</u> confined space entry operations on the center, including all contractor and subcontractor confined space entry operations; use of a similar form is allowed at WFF.• Clarify the procedure for establishing a permanent non-permit confined space.

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